Small Business Innovation Research Small Business Technology Transfer

Dr. Joseph Grant | STTR Overview | 05.08.18

SBIR / STTR Programs Vision and Mission

VISION

Empower small businesses to deliver technological innovation that contributes to NASA's missions, provides societal benefit, and grows the US economy.

MISSION

Create opportunities through SBIR/STTR awards to leverage small business knowledge and technology development for maximum impact and contribution

NASA's SBIR and STTR programs have awarded **more than $3.3 billion** to research-intensive American small businesses

Engineers and scientists from **more than 12,000** small businesses in all 50 States, DC and Puerto Rico have participated

Small Business Innovation Research (SBIR)

- A set-aside program for small business to engage in Federal R&D – with potential for commercialization
- For FY17, 3.2% of Federal agencies Extramural R&D budgets greater than $100M per year

The STTR Program

Small Business Technology Transfer (STTR)

- STTR facilitates cooperative R&D between small business concerns and U.S. research institutions – with potential for commercialization
- For FY17, 0.45% of the extramural research budget for all agencies with a budget greater than $1B per year (5 federal agencies presently participate)
- The STTR program has a statutory requirement to stimulate a partnership of ideas and technologies between innovative small business concerns (SBCs) and Research Institutions through Federally-funded research or research and development (R/R&D).
- STTR also adheres to SBA directives to increase participation by Women-Owned, Veteran-Owned and Small Disadvantaged Businesses and outreach to HBCUs and Minority Serving Institutions. Outreach is also made to under represented areas/regions of the country.

Participating Federal Agencies

SBIR + STTR Programs

Department of Defense (DoD)

Department of Health and Human Services (HHS)

Department of Energy (DoE)

National Aeronautics and Space Administration (NASA)

National Science Foundation (NSF)

SBIR Program Only

Department of Agriculture (USDA)

Department of Education (DoEd)

Department of Transportation (DoT)

Environmental Protection Agency (EPA)

Department of Homeland Security (DHS)

Department of Commerce (DoC)

Eligibility Requirements

Small Business Innovation Research (SBIR)

1. Organized for-profit U.S. business
2. At least 51% U.S. owned by individuals and independently operated
3. 500 or fewer employees
4. Principal Investigator's primary employment with small business during project
5. Intellectual Property Agreement

SBIR Phase I award rate: ~25%
SBIR Phase II award rate: ~40%

Small Business Technology Transfer (STTR)

1. Formal Cooperative R&D effort with a U.S. Research Institution
2. Minimum 40% by small business, 30% by U.S. Research Institution
3. Small business is Prime, Principal Investigator can be from Small Business Concern or Research Institution
4. Other SBIR requirements apply

STTR Phase I award rate: ~40%
STTR Phase II award rate: ~ 40 to 70%

NASA has Four Mission Directorates

Space Technology Mission Directorate (STMD): Develops and operates an overall program of science and exploration.

Aeronautics Research Mission Directorate (ARMD): Expands the boundaries of aeronautical knowledge.

Science Mission Directorate (SMD): Enables a new class of missions to deliver innovative solutions that dramatically improve technological capabilities for NASA and the Nation.

Human Exploration and Operations Mission Directorate (HEO): Provides leadership and management of NASA's human space exploration programs.

Why Should You Participate in SBIR/STTR?

For the Small Business Concerns

- Opportunity to Leverage expertise and innovative ideas from Professors/Research Staff/Students
- Opportunity to leverage specialized facilities and experimental equipment at the Research Institutions (RIs) when often SBCs may not be able to afford such facilities on their own
- Opportunity to Create Pipeline of Usable Talent for Company from the RIs
- Develop working relationship & credibility with government R&D
- Fosters partnerships with large corporations and academia
- Provides recognition and visibility for your business
- Participation attracts venture capital and other funding sources

For the Research Institutions

- Opportunity to Create/Inspire Entrepreneurship as a vital part of the Educational Experience
- Another opportunity to access federal funding for research
- An opportunity sometimes to get RI Intellectual Property (IP) involved in the project and licensed
- Another means for visibility in the research community, generate peer-reviewed pubs., etc.

Agency SBIR / STTR Differences

CONTRACTING AGENCIES

- Agency establishes plans, protocols, requirements
- Highly focused topics
- **Procurement** mechanism for DOD and NASA
- More fiscal requirements

NASA, DoD, HHS/NIH, ED, EPA, DOT, DOC

GRANTING AGENCIES

- Investigator initiates
- Approach
- Less-specified topics
- **Assistance** mechanism
- More flexibility

HHS/NIH, NSF, ED, USDA, DOE

SBIR/STTR Program Structure

Phase I: Concept

- Award Guideline: $125K
- Duration: 6 months (SBIR)
  13 months (STTR)

Phase II: Full Research R&D to Prototype

- Award Guideline: $750K
- Duration: 24 months
  - Phase II-E → 1:1 Matching up to $375K

Phase III: Transition to Commercialization/Infusion

Non-SBIR/STTR funds

- Contract from NASA program or other Agency
- Prime contractor

Go to www.sbir.nasa.gov for details

Intellectual Property

Patent Rights

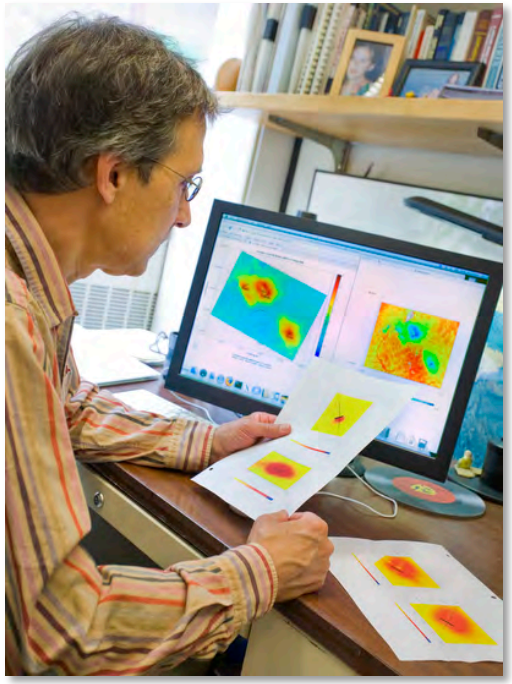
- Small business concerns normally retain the principal worldwide patent rights to any invention developed with Government support

Government Use

- The Federal Government receives a royalty-free license for Federal Government use

U.S. Patent and Trade Office
http://www.uspto.gov/

Data Protection



Protection Period

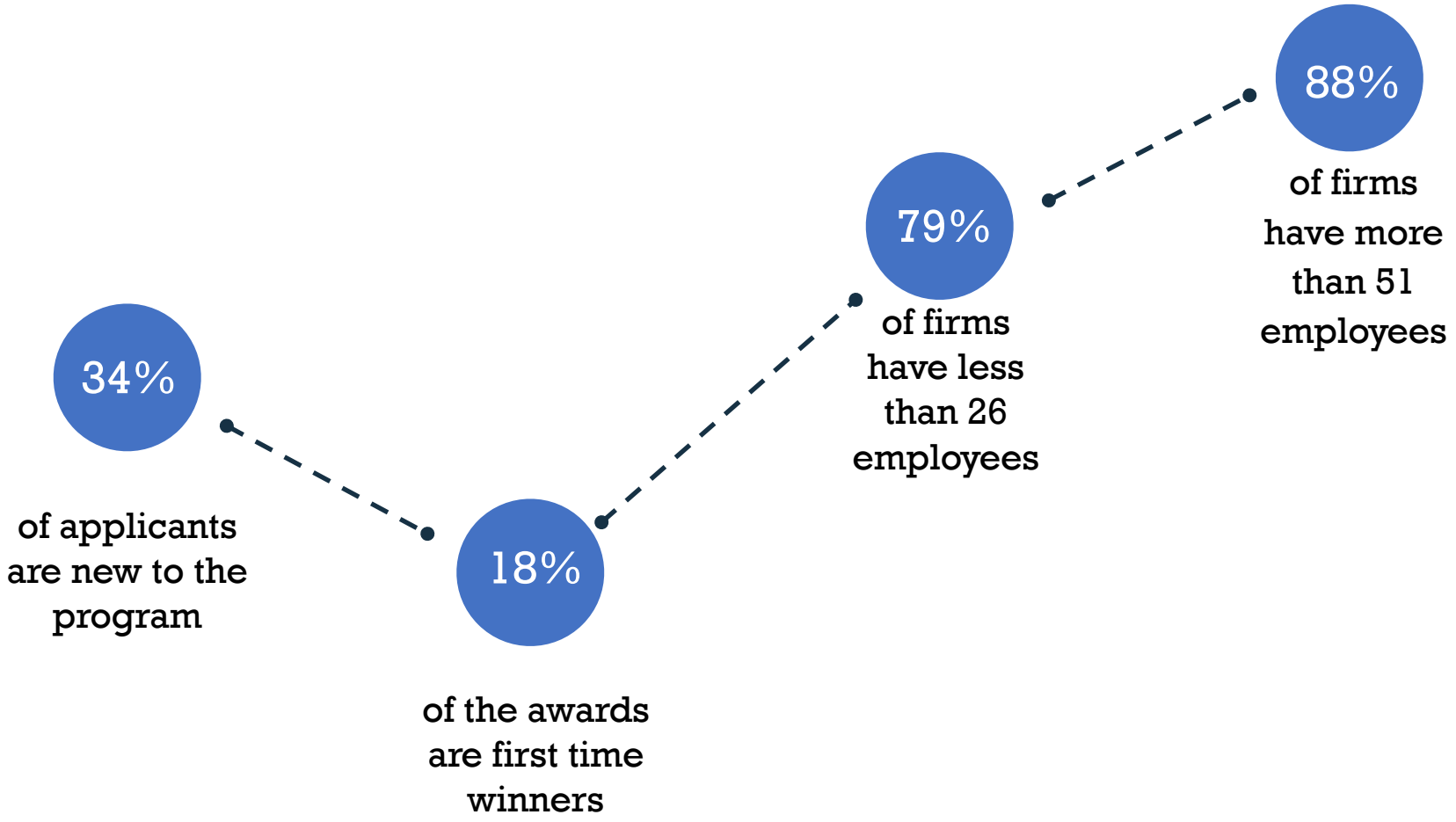
- Data generated from your R/R&D is protected from public disclosure for a minimum of 4 years (civilian agencies) or 5 years (DOD) after the conclusion of your award (Phase I, Phase II, or federally funded Phase III)

Government Use

- The Government retains a royalty-free license for Government use of any technical data delivered under an SBIR award, whether patented or not

Working with Small Businesses

FY17 Phase I SBIR/STTR Awards Data Points



Program 2018 Initiatives

I-Corps

In partnership with the National Science Foundation (NSF), NASA is offering the I-Corps program to educate selected teams on how to translate technologies from the laboratory into the marketplace.

http://sbir.nasa.gov/content/I-Corps

Mentor-Protégé Program

The NASA Mentor-Protégé Program encourages NASA prime contractors to assist eligible protégés to:

- Enhance their capabilities to perform on NASA contracts and subcontracts,
- Foster the establishment of long-term business relationships between these entities and NASA prime contractors, and
- Increase the overall number of these entities that receive NASA contract and subcontract awards.

For more information on the Mentor-Protégé Program visit: http://www.osbp.nasa.gov/mpp/index.html

Learning about NASA's Needs

Focus Areas

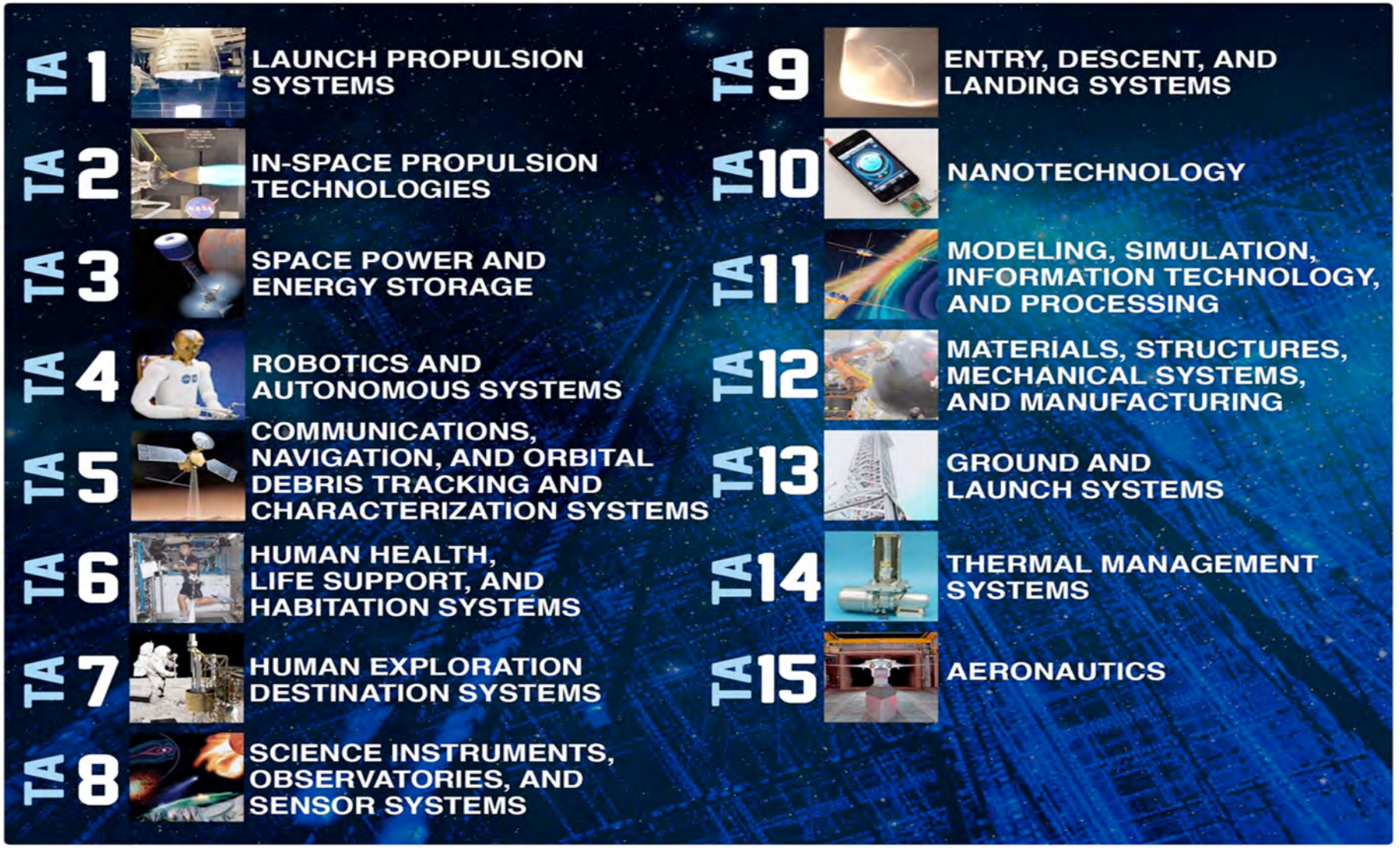
NASA's research subtopics are organized by "Focus Areas" that group interests and related technologies.

- **Identify** the Area(s) closest to your innovation/idea
- **Go** to our website to research
- **Prepare to write** a proposal tailored to NASA's needs

https://sbir.nasa.gov/solicitations

2018 Focus Areas	
1. In-Space Propulsion Technologies	12. Entry, Descent and Landing Systems
2. Power and Energy Storage	13. Information Technologies for Science Data
3. Autonomous Systems for Space Exploration	14. In-Space and Advanced Manufacturing
4. Robotic Systems for Space Exploration	15. Lightweight Materials, Structures, Assembly, and Construction
5. Communications and Navigation	16. Ground and Launch Processing
6. Life Support and Habitation Systems	17. Thermal Management Systems
7. Human Research and Health Maintenance	18. Air Vehicle Technology
8. In-Situ Resource Utilization	19. Integrated Flight Systems
9. Sensors, Detectors and Instruments	20. Airspace Operations and Safety
10. Advanced Telescope Technologies	21. Small Spacecraft Technologies
11. Spacecraft and Platform Systems	22. ISS Utilization and Microgravity Research

NASA's Technology Roadmaps



https://www.nasa.gov/offices/oct/home/roadmaps/index.html

Checklist before Submitting Application

- Submit proposal prior to the deadline
- Perform the “Endorse Proposal” step, which is the final step in the submissions process
- Make sure you meet the format requirements (margin and font size, page limitation)
- Have the RI register correctly (STTR Requirement)
  - For STTR proposals the RI needs to endorse the Research Agreement prior to your proposal being complete and submitted
    - RI will need to create an account in the Proposal Submission EHB
    - register under your firm using your EIN, State, and PIN so they are attached to your proposal correctly
    - choose the RI option at the bottom of the page when entering their name, email, phone etc

2018 Solicitation is Closed

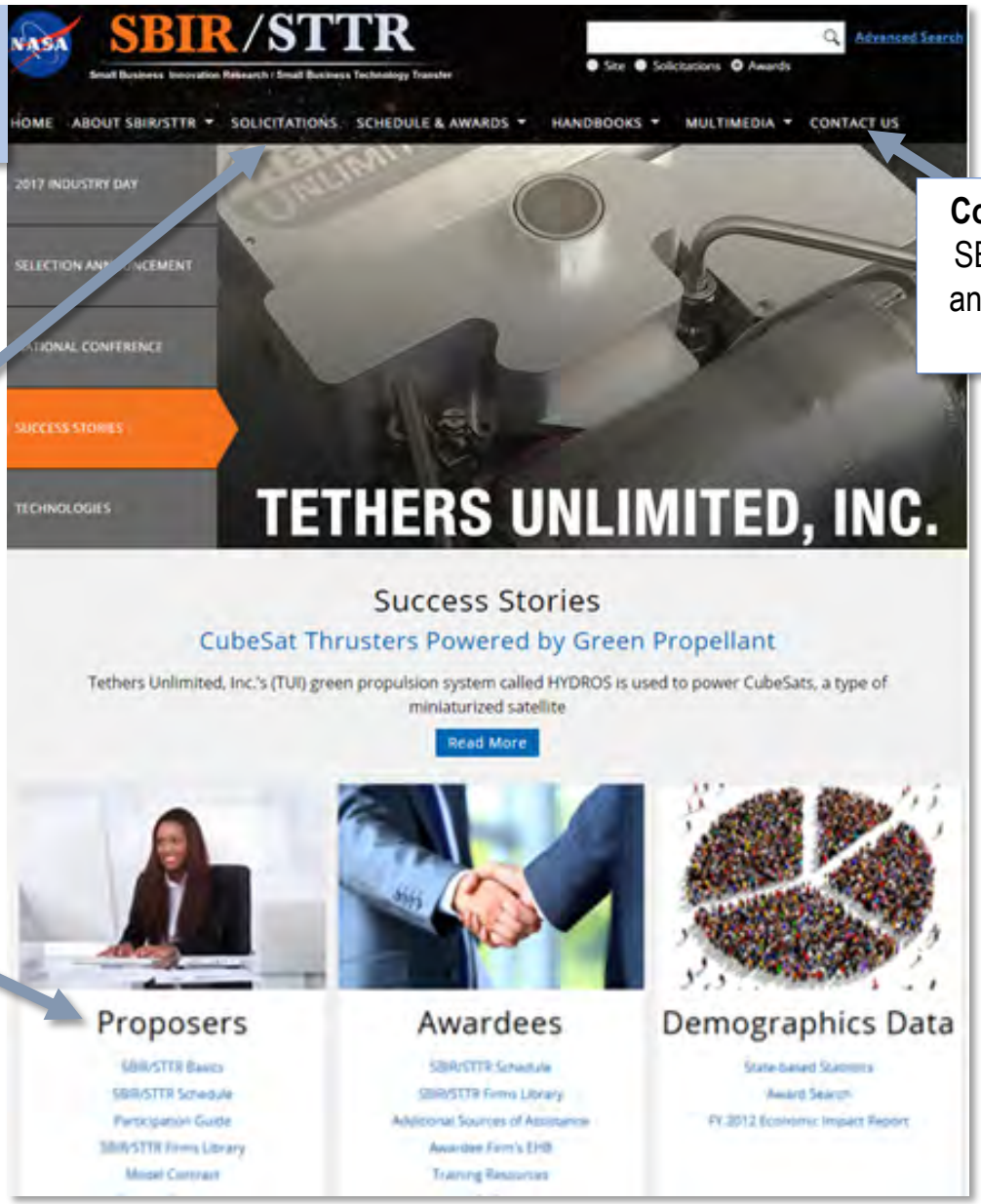
Website: www.sbir.nasa.gov **NASA Help Desk**: 301.937.0888

NASA SBIR/STTR Website www.sbir.nasa.gov

The NASA SBIR/STTR website is located at www.sbir.nasa.gov

Research NASA's Needs
Annual Solicitations including past years

Looking to Join the Program?
- Program Basics
- Forms Library
- Model Contract
- In-depth Training Resources and FAQs



Contact the Program
SBIR/STTR Helpdesk and Program Points of Contact

Success Stories

NASA SBIR/STTR Success

SBIR/STTR Success

PHASE III SUCCESS

$525,000 Grand Prize winner of the Nokia XChallenge. Awarded Over several million dollars in funding from private investors, and multiple biotech and pharmaceutical partners.

SNAPSHOT

Self-diagnosis for astronauts on long missions in outer space is possible using an innovative blood analysis system which can generate comprehensive medical test results within minutes using a single drop of blood.

Easy and Non-intrusive Nanoscale Diagnostic Platform

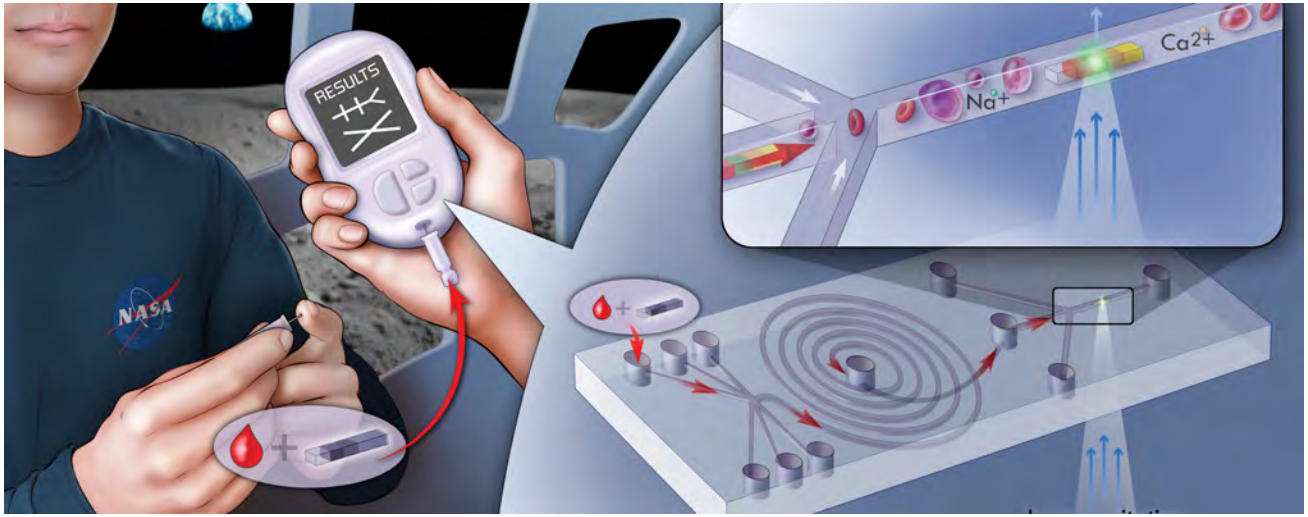
DNA Medicine Institute (DMI), Cambridge, Massachusetts

Challenge

NASA had been searching for ways to monitor the health of astronauts during long missions using tests that would be easy to administer and are not intrusive. NASA also wanted to enable astronauts to address medical issues immediately without waiting for guidance from mission control.

Innovation

DMI developed a comprehensive nanoscale diagnostic platform to meet these stringent requirements. The solution includes fluorescence-based test strips, a hand-held sensor and software to generate a medical results dashboard.



https://sbir.nasa.gov/success-stories

SBIR/STTR Success

PHASE III SUCCESS

Recent Phase III follow-on contracts with NASA worth $200K to supply the UBC to the International Space Station; technology results in cost savings of $2 million per launch.

SNAPSHOT

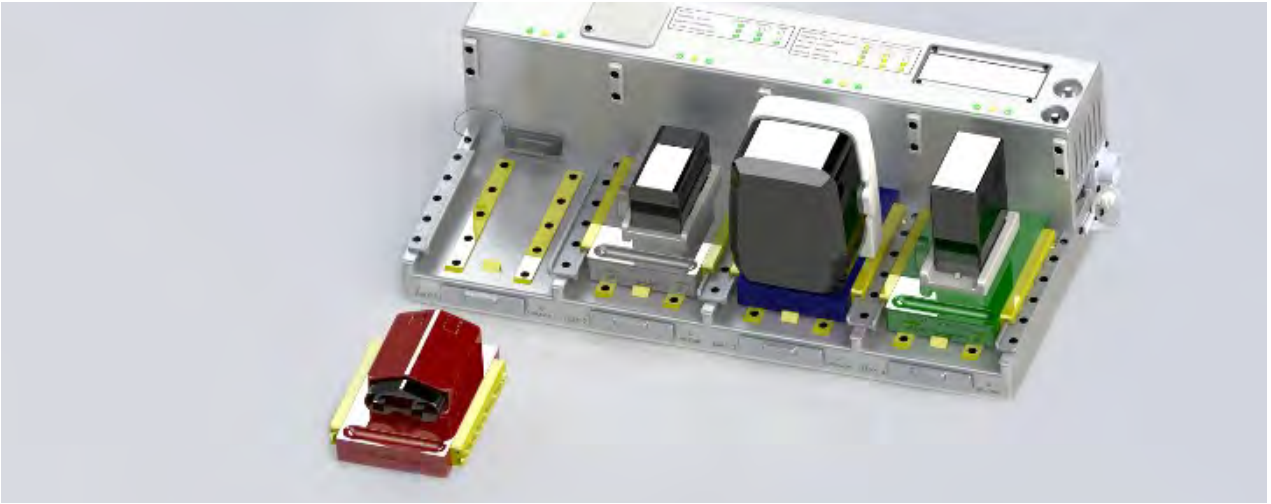
Aurora Flight Science has utilized the NASA SBIR program to develop a Universal Battery Charger for use on the ISS capable of interfacing with the most commonly used batteries on board.

ISS Universal Battery Charger (UBC)

Aurora Flight Sciences Corporation, Manassas, VA

Innovation

From camcorders and digital cameras, to science experiments, to drills, the International Space Station is home to a handful of tech gadgets and power tools that constantly need to be charged. Just like on Earth, all of these things require their own dedicated chargers. While the obvious inconvenience of lugging dozens of various adapters to space might seem like reason enough to invest in a universal battery charger, the driving force is actually the cost. The estimated total to launch 1 kg (a little over 2 pounds) of equipment into orbit is over $10,000. Although the newer launch vehicles may drive that figure down, it will still cost thousands of dollars to send equipment into space – necessitating a simpler, cost-effective system for use on the ISS.



SBIR/STTR Success

PHASE III SUCCESS

More than $3 million in follow-on contracts with NASA, DOD, and private companies.

SNAPSHOT

Honeybee Robotics has developed advanced robotic and electromechanical systems that operate in challenging environments in space and on Earth. Since 2003, every NASA spacecraft to land on the Martian surface has utilized technology built by Honeybee.

Compact Lightweight Sampling Drill for Planetary Exploration

Honeybee Robotics, Ltd., New York, New York

Innovation

From Brooklyn, New York-based Honeybee Robotics has spent over fifteen years developing advanced robotics systems and planetary drills that allow scientists to explore planets in three dimensions. The company's meter-class drill extraction systems were originally intended for lunar missions. Honeybee had a vision of sustaining a human or robotic presence on the Moon to mine local resources from a central base, thus decreasing the cost and wait times associated with sending them up from Earth.

https://sbir.nasa.gov/success-stories

Contact us and let's innovate together

Website: **www.sbir.nasa.gov**

NASA Help Desk: **301.937.0888**